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NOTES ON SOME AMERICAN MOSQUITOES WITH DESCRIPTIONS OF NEW SPECIES.

BY HARRISON G. DYAR AND FREDERICK KNAB.

The following paper is a continuation of the subject presented in this Journal (Proc. Biol. Soc., Wash., xix, 133-142). Continued studies and the receipt of new material have made a number of matters worthy of record. As in our previous paper, the first locality mentioned in the description of new species may be considered the type locality.

GENUS ANOPHELES MEIGEN.

Anopheles quadrimaculatus Say.

Anopheles quadrimaculatus Say, Keating's narr. St. Peters River, ii, 356, 1824.

Anopheles guttulatus Harris, Cat. Ins. Mass., 1833.

Anopheles annulimanus van der Wulp, Tijd. voor Ent., x, 127, 1867.

Anopheles walkeri Theobald, Mon. Culic., i, 199, 1901.

This species is clearly not introduced from Europe, and we think should not be considered the same as the European *maculipennis* Meigen without rigid proof. We are unable to make the comparison, having neither adults nor larvae of the European species. Theobald's comparison of adults (Mon. Culic., i, 194, 1901), is inconclusive, especially without exact examination of larvae. We therefore provisionally eliminate the European names from the synonymy. Our species ranges throughout the eastern United States, from New Hampshire and Ontario to Florida and Texas. We have it also from Cuba. Western localities should be discredited. Occasional specimens have the black wing-spots indistinct or absent. We believe that such specimens were the basis of the records of the European *A. bifurcatus* Linn. in America and of Theobald's *A. walkeri*.

Anopheles occidentalis sp. nov.

Thorax with a broad dorsal pale lilaceous band, cut by three narrow brown stripes; a broad lateral brown band; pleura pale, with three brown stripes; abdomen, legs and palpi dark brown. Wings with the scales of the veins forming four black spots as in *A. quadrimaculatus*, but rather more rounded and contrasted.



118 specimens, Stanford University, California (Isabel McCracken); San Diego, Sissons and Thrall, California (Dyar & Caudell); Portland, Oregon (R. P. Currie); Revelstoke, B. C. (H. G. Dyar); Boise, Idaho (J. M. Aldrich); Lehi, Utah (W. A. Hooker).

Type.—Cat. No. 10,028, U. S. Nat. Mus.

Anopheles atropos sp. nov.

Deep black; thorax obscurely lined with violaceous, especially posteriorly. Head, abdomen and legs black, no markings on the pleurae. Wing scales outstanding, uniform, not forming spots, though a little thicker at the usual points, indicating the spottings.

Allied to *A. quadrimaculatus* Say, but rather smaller, and deep black, not brown, the abdomen without traces of the lighter bandings.

Seven specimens, Florida Keys (Dr. Hiram Byrd).

Type.—Cat. No. 10,029, U. S. Nat. Mus.

Anopheles bellator sp. nov.

Palpi black; head black, a tuft of pale scales between the eyes. Thorax gray, with four black longitudinal lines, the two nearest the middle narrower and stopping short of the base, the two lateral ones attaining the scutellum; before scutellum a short median black line; pleurae dark, with two white stripes. Abdomen entirely dark. Costa of wing with six white spots, one basal, the last at extreme apex; third vein white, with a black spot at apex and near base; fifth vein white near base and at base of the fork, and a small white spot on upper branch; fringe with two white spots, at lower fork of fourth vein and upper fork of fifth vein respectively. Front legs with the femora with a black spot at base, a black dash at middle third and two black spots at apex; tibiae dark above, with two black, nearly encircling, spots at apex; first tarsal joint with a black ring near the base, second and third joints black at the base, fourth and fifth entirely black. Mid legs with the femora mostly black; tibiae black, white at tip; first tarsal joint black, white at tip; second black at base, apical half white; third and fourth joints black, white at tip; fifth black. Hind legs with femora white, black above, with a black ring at the outer third; tibiae black above with two black rings toward apex; first tarsal joint black, with a white apical ring and white at extreme base; second, third and fourth joints black, with white apical ring; fifth joint black.

Three specimens, Trinidad, B. W. I. (F. W. Ulrich; A. Busck).

Type.—Cat. No. 10,027, U. S. Nat. Mus.

Near *A. lutzii* Cruz, but differs in the coloration of the palpi and legs. According to Dr. Lutz, *A. lutzii* was first described by Dr. Oswald Cruz in the Brazil Medico. Theobald redescribes it as a new species; but it should be credited to Cruz.

Anopheles tarsimaculata Goeldi.

Anopheles tarsi-maculata Goeldi, Os. Mosq. no Para, 133, 1905.

Goeldi proposed this name as a substitute for *albipes* Theobald, because he did not like the name. The specimens before him, from Para, Brazil, are, however, not properly referable to *albipes*, which is synonymous with

albianus Wiedemann. Neither are they referable to *argyritarsis* Robineau-Desvoidy, of which they are treated as a variety by Goeldi, nor to *albitarsus* Lynch-Arribáizaga, which is another distinct species, as Arribáizaga's figure shows. The form, which is close to *albianus*, differs in the coloration of the palpi, which have much more of white. Goeldi's name may therefore be used for this form. Our specimens are from Sao Paulo and Manaus, Brazil, and Trinidad, B. W. I.

GENUS JANTHINOSOMA LYNCH-ARRIBÁIZAGA.

***Janthinosoma vanhalli* Dyar & Knab.**

Culex albitarsis Neveu-Lemaire (not Theobald), Archiv. de Parasit., vi, 10, 1902.

Janthinosoma vanhalli Dyar & Knab, Proc. Biol. Soc. Wash., xix, 134, 1906.

We quote the above synonymy. *C. albitarsis* Theob. is an African species.

***Janthinosoma posticatus* Wiedemann.**

Culex posticatus Wiedemann, Dipt. Exot. I, 43, 1821.

Janthinosoma echinata Grabham, Can. Ent., xxxviii, 311, 1906.

The form of *Janthinosoma* occurring in Mexico, Central America, Trinidad, Santo Domingo, Jamaica to Brazil, with the hind legs with raised scales, thorax all golden yellow scaled and the abdominal segments below banded with blue-black at base, seems to be uniform throughout its range. It is the *Culex posticatus* of Wiedemann and is a different species from *Janthinosoma sayi* Dyar & Knab (*Culex musicus* Say) of the United States. We have compared larvae of *echinata* received from Dr. Grabham with ones from Mexico collected by the junior author and find them identical. The larvae differs from *sayi* in the much stouter and more heavily-spined antennae, which are about equally long. We have received apparently the same larvae (*posticatus*) from Estero, Florida (J. B. Van Duzee), but they are unbred.

***Janthinosoma indoctum* sp. nov.**

We propose this name for the larvae called "*Janthinosoma scholasticus* Theob." (Journ. N. Y. Ent. Soc., xiv, 182, 1906.) The adults resemble closely those of *J. infine* Dyar & Knab, but differ in the ornamentation of the thorax. In *infine* the thorax is dark reddish brown with two white spots on the disk, two at the front margin, faint, and whitish scales on the scutellum; In *indoctum* the thorax is dull brown with yellowish and white scales forming diffuse patches. *Scholasticus* Theobald is a true *Culex*. All the *indoctum* are from Trinidad; all the *infine* from Santo Domingo. The locality "Trinidad" should be erased in our description of *infine*.

22 specimens, Trinidad (F. W. Urich; A. Busck.)

Type.—Cat. No. 10,026, U. S. Nat. Mus.

***Janthinosoma insularius* Dyar & Knab.**

Janthinosoma insularius Dyar & Knab, Proc. Biol. Soc. Wash., xix, 135 1906.

The larvae of this species are those described and figured by us as "*Janthinosoma pygmaea* Theob." (Journ. N. Y. Ent. Soc., xiv, 182, 1906.)

Janthinósoma pygmaea Theobald.

Grabhamia pygmaea Theobald, Mon. Culic., iii, 245, 1903.

Culex nanus Coquillett, Can. Ent., xxxv, 256, 1903.

We are much indebted to Dr. Grabham for cast skins of the larvae of this species from Jamaica. It falls in our table (Journ. N. Y. Ent. Soc., xiv, 181, 1906) with "*pygmaea*" (*insularius* D. & K.), but differs in detail. In the true *pygmaea* there are four pecten teeth on the tube, which reach nearly to the middle; the teeth are variable in shape, but none have the long secondary spine shown in our figure of *insularius*. The comb scales have the central spine longer and curved at tip. Both the head hairs are single. We have placed the types of *nanus* Coquillett from Florida and a large series taken by Dr. Coffin in the Bahamas with *pygmaea* Theobald from Jamaica. The larvae, however, of these mosquitoes are still unknown.

GENUS AEDES MEIGEN.

Aedes euplocamus Dyar & Knab.

Mr. Urich has sent us from Trinidad, two bred specimens, the larvae of which agree with our *euplocamus* (Journ. N. Y. Ent. Soc., xiv, 199, 1906), described from Costa Rica. The identification of the adult of the Costa Rican larvae as *trivittatus* Coquillett was due to some confusion in the list returned to us; most of the adults are, we find, placed under *confirmatus* in the collection. The name "*confirmatus*" has been used for a number of different mosquitoes which are similar in having a large silvery patch on the anterior part of the thorax. We have given new names to the forms identified as "*confirmatus*" from the United States (*Aedes infirmatus* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 197, 1906) and Jamaica (*Aedes hemisurus* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv., 199, 1906), and we now identify the Trinidad species, named "*confirmatus*" by Mr. Theobald.

It is, of course, possible that *euplocamus* is the same as *confirmatus* Lynch-Arribáizaga, described from the Argentine, in which case Mr. Theobald's identification should be restored. But we have as yet no proof of this. Our *euplocamus* ranges from Costa Rica to Trinidad, as we now know, and it will doubtless be found to extend into the tropics of Brazil; but whether the Argentine form is the same or not can only be told from more perfect collections than we possess at present.

Aedes serratus Theobald.

Culex serratus Theobald, Mon. Culic., ii, 75, 1901.

(?) *Aedes meridionalis* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 195, 1896.

Mr. F. W. Urich has sent us a specimen bred from a small pool in the forest, Trinidad, which we think is the *Culex serratus* of Theobald, described from Brazil and Trinidad. This species has been identified as occurring in the United States, but we have found there to be two species, differing in the larvae. We have renamed these, calling the Atlantic Coast one *Aedes atlanticus*, the Gulf Coast one *Aedes tormentor* (Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 191, 198, 1906). We assumed that neither was conspecific with the Tropical American form, and this assumption is proven to be

correct by the larva before us. It falls in the table with *meridionalis*, having 12 scales in the comb,* but differs in that the pecten of the tube does not reach half the length. The difference is not very marked, and the larvae are otherwise much alike, so that it seems not unlikely that our *meridionalis* will fall as a synonym of *serratus* Theobald. Working with the larvae alone and handicapped by the identification of "*Janthinosoma musica* Say" which we had received for the adults (See Journ. N. Y. Ent. Soc., xiv, 195), the larva of the true *serratus* being unknown, we had no way of knowing that we had a larva before us the same as or near *serratus* Theob. A bred adult (♂) of *Aedes meridionalis* shows the median silvery thoracic band of *serratus*, but the specimen is not perfect and we await further material before pronouncing positively on the synonymy.

***Aedes pertinax* Grabham.**

Aedes pertinax Grabham, Can. Ent., xxxviii, 316, 1906.

Dr. Grabham has kindly communicated to us larval skins of this species from Jamaica. It falls in our table (Journ. N. Y. Ent. Soc., xiv, 189, 1906) with *tormentor* Dyar & Knab, from the Gulf coast of the United States, but differs in the pecten of the tube, which does not run out so far, and has the tuft just at the last tooth instead of well within.

***Aedes auratus* Grabham.**

Aedes auratus Grabham, Can. Ent., xxxviii, 313, 1906.

Dr. Grabham has sent us also larval skins of this Jamaican species. It falls in our table (Journ. N. Y. Ent. Soc., xiv, 189, 1906) under dichotomy 5, with *janitor* and *lactator*. These species are *Culices*, and only included under *Aedes* from the similarity of their modification. *Auratus* differs from them in having only the single pair of hair tufts on the tube. These tufts are only just within the pecten, opposite the last tooth. Except for the difference in the lateral comb, the larva is very much like that of *Aedes pertinax* Grabham.

***Aedes capricornii* Lutz.**

Haemagogus capricornii Lutz in Bourroul, Mosq. do Brazil, p. 4 of key to species of Euculicidae, 1904.

Stegoconops capricorni Lutz, Imprensa Medica, (sp. no. x).

Mr. Urich has sent us three males, which we attribute to Dr. Lutz's species *capricornii*. The description applies excellently, except only as to the position of the lower cross-vein of the wings; but as we have only males and Dr. Lutz describes from females, this may easily be a sexual difference if not simply varietal. We are much indebted to Dr. Lutz for copies of the publications above referred to, but are unable to quote the latter one accurately, as the separate sent us contains neither pagination nor date. The "Imprensa Medica" is not available in Washington. *Capricornii* was described from the "zone of the Tropic of Capricorn," which we infer to be the vicinity of Rio de Janeiro, Brazil. The known habitat is now extended to include

the island of Trinidad. Mr. Urich secured the larvae, which are peculiar, with a dense coat of fine long pile. They fall in our table with *philosophicus* (Journ. N. Y. Ent. Soc., xiv, 190, 1906), but differ therefrom in the body pile and the comb of the eighth segment, the scales of which are joined on a basal plate. They occurred in a hollow tree at St. Anns, Trinidad.

Specimens from Trinidad identified by Mr. Coquillett as "*Haemagogus allonaculatus* Theobald" are apparently this species.

***Aedes philosophicus* Dyar & Knab.**

This name (Journ. N. Y. Ent. Soc., xiv, 195, 1906) is based on larvae from Mexico and Salvador, which were identified as adults as "*Haemagogus equinus* Theobald." We refused to accept this name as we could not find the description. It exists, nevertheless (Entomologist, xxxvi, 282, 1903); but the circumstance proves fortunate, for the specimens were wrongly named. *A. philosophicus* has toothed claws in the female adult and obviously belongs to Dr. Lutz's genus *Stegoconops*, which we are unable to recognize as distinct from *Aedes*. The species has faint silvery white bands on all the abdominal segments above and thus superficially resembles *Haemagogus equinus* Theobald, described from Jamaica; but that has simple claws in the female, as Theobald expressly states.

***Aedes affirmatus* sp. nov.**

Shining blue, like *Haemagogus splendens* Williston but the female with the fore and middle tarsal claws toothed. Head and thorax clothed with metallic blue scales, pleurae silvery white; abdomen dark blue above, the first segment with a white bar on each side, below with silvery white segmental bands. Legs blue-black, middle and hind femora with a silvery white spot at tip, the middle femora narrowly white lined below, the posterior ones very broadly so for the basal three-fourths. Base of first submedian cell nearer apex of wing than base of second posterior cell.

Four specimens, Santa Lucrecia, State of Vera Cruz, and Salina Cruz, State of Oaxaca, Mexico; Las Loras, near Puntarenas, and Rio Aranjuez, Puntarenas, Costa Rica (F. Knab).

Type.—Cat. No. 10,023, U. S. Nat. Mus.

The larva is unknown.

***Aedes mediovittata* Coquillett.**

Stegomyia mediovittata Coquillett, Can. Ent., xxxviii, 60, 1906.

Gymnometopa mediovittata Coquillett, Proc. Ent. Soc. Wash., vii, 183, 1906.

Aedes mediovittata Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 196, 1906.

Gymnometopa mediovittata Coquillett, Tech. ser. 11, Dept. Agr., Bureau Ent., 25, 1906.

Mr. Coquillett specified this species as the type of his genus *Gymnometopa*, but later he defines the genus as having simple claws in the female, and includes with *mediovittata*, *sextineata* Theobald, *albonotata* Coquillett and *busckii* Coquillett, species actually with such claws. *Mediovittata*, however, has toothed claws, so that *Gymnometopa* will thus become a synonym of *Aedes*, the other associated species falling into *Haemagogus*.

We have described the very peculiar larvae of this species.

***Aedes podographicus* sp. nov.**

♂. Thoracic ornamentation similar to the ♀. Thorax black, silvery scaled on the sides before the wings. ♀. First joint of middle tarsi white, a black spot at the middle, not black, white at the ends.

This is the Central American form referred to by us as *Aedes insolita* Coquillett under Mr. Coquillett's determination (Journ. N. Y. Ent. Soc. xiv, 203, 1906), but it appears from a nice bred series sent us by Mr. F. W. Ulrich, that *insolita* (which was described from Trinidad) is the female of the species of which *Verrallina laternaria* Coquillett is the male, the sexes being dimorphic. The species will be known as *insolita* Coquillett. In *podographicus* the sexes are monomorphic.

The larvae were separated by us on the shape of the antennae; but as this character is rather indefinite, it will be better to change the table, omitting the dichotomy 40, placing *podographicus* with *insolita* under 44, and separate them by the shape of the pecten of the air tube as shown in our figures 17 and 20, figure 17 representing *insolita* and figure 20, *podographicus*.

Localities as given by us under *Aedes insolita* (*Verrallina insolita* Dyar & Knab, not Coquillett). Sonsonate, Salvador may be considered the type locality.

Type.—Cat. No. 10,016, U. S. Nat. Mus.

GENUS HAEMAGOGUS WILLISTON.

Haemagogus Williston, Trans. Ent. Soc. Lond., 271, 1896.

Howardina Theobald, Mon. Culic., iii, 287, 1903.

Gualteria Lutz, Imprensa Medica (species No. VI), 1905?

Gymnometopa Coquillett (in part), Proc. Ent. Soc. Wash., vii, 183, 1906.

Cacomyia Coquillett, Tech. ser. 11, Dept. Agr., Bureau Ent., 16, 1906.

The genus *Haemagogus* will have to be recognized on adult characters if at all; the larvae do not sharply differentiate themselves from *Aedes*. We take this to be a group specialized off from *Aedes*, the tarsal claws of the female having lost the tooth. The small end joint of the palpus is retained, which differentiates the genus from *Culex*. We add to the genus, as used by Theobald, *Howardina* and *Gymnometopa* (all but the type species), which differ in ornamentation, but agree in other respects. *Cacomyia* was proposed by Coquillett for *albomaculata* Theobald and *equinus* Theobald, on the venational characters used by Theobald to separate the species. We agree with the English author that these are not of generic value. The other characters adduced by Coquillett from specimens before him are fallacious, for he had before him neither *albomaculatus* nor *equinus*, the specimens he had so identified being, as to the former, *Aedes capricornii* Lutz and *Aedes affirmatus* Dyar & Knab; as to the latter, *Aedes philosophicus* Dyar & Knab, all with toothed claws, in contradiction of Theobald's explicit statement to the contrary. We presume that the three species placed by Dr. Lutz in his genus *Gualteria* belong here, though we have not seen authentic specimens. *G. fulvithorax* is stated to have simple claws, but of

G. oswaldi and *G. fluvialis* we can not determine any positive statement in Dr. Lutz's writings on this point. Moreover, the description of *oswaldi* reads so much like our *Aedes insolita* Coquillett that we are in some doubt if it is not actually that species. In this case it would be removed from *Haemagogus*, as *insolita* has toothed claws in the female.

KEY TO THE SPECIES OF HAEMAGOGUS.

- Thorax with narrow longitudinal white or golden lines.
- Two middle thoracic lines running back to scutellum ¹ *sexlineata* Theobald
- Two middle thoracic lines running back two-thirds, followed by a single line.
- Lateral thoracic line broad, silvery white . . . ² *walkeri* Theobald
- Lateral thoracic line narrow, or broken, silvery.
- Median posterior thoracic line narrow, silvery ³ *albonotata* Coquillett
- Median posterior thoracic line broad, diffusely golden or silvery, ending in a silver spot on scutellum ⁴ *busckii* Coquillett
- Thorax with a golden lateral line ² *aureostriata* Grabham
- Thorax without narrow dorsal lines.
- Base of first submarginal cell nearer base of wing than the base of the second posterior cell.
- Thorax dorsally metallic blue or green.
- Abdomen without spots dorsally *splendens* Williston
- Abdomen with basal segmental silvery white spots *regalis* Dyar & Knab
- Thorax dorsally black and white banded *oswaldi* Lutz
- Thorax dorsally golden before, dark behind *fluvialis* Lutz
- Thorax dorsally all golden *fulvithorax* Lutz
- Base of first submarginal cell nearer apex of wing than base of second posterior cell.
- With large setae on third and fourth abdominal segments; last two segments with silvery white median patches *albomaculatus* Theobald
- Without prominent setae; fourth to seventh segments with white basal bands *equinus* Theobald

Haemagogus splendens Williston.

We restore Williston's name for the species identified as the *cyaneus* of Fabricius by Mr. Theobald, as we think we have found a species that fits better to Fabricius' description than *splendens* does, namely *Sabethoides confusus* Theobald.

1. From Trinidad. 2. From Jamaica. 3. From Santo Domingo. 4. From Dominica, Martinique, and Guadeloupe.

Haemagogus regalis sp. nov.

Proboscis long, black; head and thorax brilliant metallic blue and green; pleurae silvery; abdomen dark blue with silvery bands on all the segments above, broader below. Legs blue-black, the mid and hind femora white below towards base. Base of the first submarginal cell slightly nearer the base of wing than base of the second posterior cell.

22 specimens, Sonsonate, Salvador (F. Knab), San Juan, Trinidad (F. W. Urich), Cacao, Trece Aguas, Alta Vera Paz, Guatemala (Schwarz & Barber), Livingstone, Guatemala (H. S. Barber).

Type.—Cat. No. 10,024, U. S. Nat. Mus.

The larva was confused by us with that of *splendens* Williston (*cyaneus* Theobald, not Fabricius). The table (Journ. N. Y. Ent. Soc., xiv, 191, 1906) should be corrected under dichotomy 43 by striking out "short abdominal hairs stellate" and for "*cyaneus*" read "45." Add a new dichotomy, 45, as follows:

45. Pecten reaching over half of tube, of about 18 teeth; secondary abdominal hairs not stellate *regalis*
 Pecten not reaching half of tube, of about 12 teeth; dorsal abdominal hairs stellate, long *splendens*

Haemagogus fulvithorax Lutz.

Haemagogus fulvithorax Lutz in Bourroul, Mosq. do Brasil, p. 4 of Key to Euculicidae, 1904.

Gualteria fulvithorax Lutz in Bourroul, Mosq. do. Brasil, p. 13 of Cat. of species, 1904.

Gualteria fulvithorax Lutz, Imprensa Medica (Sp. No. VII), 1905?

Taeniorhynchus palliatus Coquillett, Can. Ent., xxxviii, 61, 1906.

Mr. Urich has discovered the larva of this elegant species and sent us several larval skins from Trinidad. The species, by the thoracic ornamentation of the adult, is like *Aedes knabi* Coquillett (*Culex knabi* Coquillett, Proc. Ent. Soc. Wash., vii, 133, 1906). That Mr. Coquillett should describe the species in *Taeniorhynchus* while Dr. Lutz places it in *Haemagogus*, shows the futility of the scale characters as a means of generic separation. The larva falls in our table of *Aedes* under the dichotomy 43, and would go into 44 (with *knabi*, *insolita*, and *podographicus*) but that the secondary abdominal hairs are coarse and stellate. It has the air tube short, 2 x 1, strongly tapered on outer half, the pecten of 13 densely placed teeth, the outer ones long, blunt, followed by a long, 4-haired tuft. The larvae were taken from a hollow tree, and were forwarded to Mr. Urich by Dr. J. R. Dickson. We congratulate Mr. Urich and Dr. Dickson on this interesting discovery.

Haemagogus aureostriata Grabham.

Howardina aureostriata Grabham, Can. Ent., xxxviii, 171, 1906.

Dr. Grabham has sent us these curious larvae. They fall in our table in *Aedes*, but separate at the dichotomy 18 on the length of the air tube, it being over four times as long as wide in *aureostriata* and three times or less in the other species. The comb scales are very peculiar, being in a long, straight row, much as in the genus *Mochlostyrax*.

GENUS SABETHES ROBINEAU-DESVOIDY.

Sabethes cyaneus Fabricius.

Culex cyaneus Fabricius, Syst. Antl., 35, No. 9, 1805.

Sabethes nitidus Theobald, ♀, Mon. Culic., ii, 347, 1901.

Sabethoides confusus Theobald, Mon. Culic., iii, 328, 1903.

An examination of the descriptions of Fabricius and Wiedemann seems to us to clearly indicate that Fabricius had before him this Sabethid, rather than the species *Haemagogus splendens* Williston which Mr. Theobald has made a synonym of Fabricius' old species. The abdominal markings form a lateral line as described, which is not the case in *splendens*, and the color of the thorax also agrees.

GENUS WYEOMYIA THEOBALD.

Wyeomyia pertinans Williston.

Aedes pertinans Williston, Trans. Ent. Soc., Lond., 271, 1896.

Aedes pertinans Giles, Gnats or Mosq., 352, 1900.

Wyeomyia pertinans Theobald, Mon. Culic., ii, 272, 1901.

Wyeomyia pertinans Giles, Gnats or Mosq., 2 ed., 498, 1902.

Aedes pertinans Giles, Gnats or Mosq., 2 ed., 483, 1902.

Wyeomyia pertinans Blanchard, Les Moust., 424, 1905.

Wyeomyia ochrura Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 229, 1906.

Wyeomyia ochrura Dyar & Knab, Proc. Biol. Soc., Wash., xix, 141, 1906.

We quote the above synonymy for this widely distributed species, having now before us cotypes of *pertinans*, which Dr. Williston has very kindly sent us for examination. It is a true Sabethid, not a *Culex* (see remarks under *Culex divisor* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 222, 1906).

GENUS CULEX LINNÆUS.

Culex ocellatus Theobald.

Culex ocellatus Theobald, Mon. Culic., iii, 222, 1903.

Mr. Urich has discovered the larva of this pretty species, which he had formerly bred from a pupa in Bromelia water. It falls in our table (Journ. N. Y. Ent. Soc., xiv, 207, 1906) with *imitator*, *consolator* and *inimitabilis*, being a close ally of these species, with its extremely long air tube and general slender, colorless appearance. It differs from *rejector* in the smaller pecten with two detached teeth, which are as in *consolator*; it differs from *inimitabilis* in having more teeth in the pecten (it has seven while *inimitabilis* has five) and in having a median hair tuft on the tube instead of a single hair; it differs from *consolator* in having a small multiple tuft on the tube beyond the middle and a subapical single hair instead of four rather long 2-haired tufts. It is nearest to *imitator* Theobald, so much so that we can not demonstrate any differences in the limited and somewhat defective material before us (the head hairs of *imitator* have not been studied). The antennae of *ocellatus* are slender, pale, the tuft from a small notch well beyond the middle; upper head tuft in fours, lower a single thick spinulated hair.

Bred by Mr. Urich from Bromelia water, Sangre Grande, Trinidad.

Culex azymus sp. nov.

♀. Palpi, proboscis and antennae black; head white behind, with a patch of black, forked scales in the middle, black on the sides below, setae black. Thorax black, golden-brown scaled, uniform, without spots, setae black; pleurae whitish, with a black band above bases of legs and another below wings. Abdomen black, with narrow whitish basal segmental bands, widening laterally, venter grayish white. Legs black, the femora pale below, tibiae and the first two tarsal joints appearing whitish on lower side in certain lights, unbanded.

Allied to *Culex pleuristriatus* Theobald, but lacking the thoracic spotting and any trace of the white tarsal bands.

The larva is allied to *pleuristriatus* (Journ. N. Y. Ent. Soc., xiv, 205, 209, 1906), but the pecten of the air tube has two detached teeth, which exceed the two basal hair tufts.

One specimen, bred from larvae in Bromelia water at Arima, Trinidad by Mr. F. W. Urich.

Type.—Cat. No. 10,020, U. S. Nat. Mus.

Culex basilicus sp. nov.

♀. Proboscis black with a broad, dull white ring; antennae and palpi black; head with light golden yellow scales behind. Thorax black with brown-black scales centrally; along the sides of disk a band of light yellow scales with a narrow square central projection into the disk; a square patch of same color behind, and on scutellum; pleurae whitish, marked, with black above, centrally and on the bases of the legs. Abdomen black with central basal white spots on the first four segments, pale terminal hairs on all the segments; venter with short, broad white basal segmentary bands. Legs black, femora pale beneath, tips of femora and tibiae white, tips and bases of the tarsal joints very narrowly white. Wings with narrow scales.

The larva falls in the table with *janitor* and *lactor* (Journ. N. Y. Ent. Soc., xiv, 205, 1906), but differs in having the ring of the anal segment broad; pecten of eight spines reaching to the middle of the air tube; one tuft within the pecten, three beyond it, not in line, two tufts on the dorsal aspect of the tube, all the tufts 2-haired only, thick and coarse.

Five specimens, bred by Mr. Urich from larvae in a tub near the kitchen at Arima, Trinidad.

Type.—Cat. No. 10,021, U. S. Nat. Mus.

Culex consolator sp. nov.

The larva is very close to *Culex rejector* Dyar & Knab, unbred (Journ. N. Y. Ent. Soc., xiv, 221, 1906), found in Bromelia water at Cordoba, Mexico. It differs in having the hair tufts on the tube long, the anal segment with a lateral rosette of spines. A single male was bred by Mr. Urich from a larva in Bromelia water at Arima, Trinidad.

♂. Head black, with narrow, curved whitish-gray scales behind and black setae. Proboscis black, palpi black, very hairy, with white rings at

the bases of the joints; antennae black. Thorax golden brown, with pale longitudinal striation, under a higher power with sparse golden scales and coarse black setae, two whitish dorsal impressed lines and an oblique one on the pleura before the wing insertion. Abdomen black with distinct white basal bands; thorax below greenish; legs black, femora pale below; all the tarsi with narrow white basal rings.

Type.—Cat. No. 10,019, U. S. Nat. Mus.

***Culex imitator* Theobald.**

Culex imitator Theobald, Mon. Culic., iii, 175, 1903.

Culex daumsaturus Dyar & Knab, Journ. N. Y. Ent. Soc. xiv, 220, 1906.

Culex vector Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 220, 1906.

A series of isolations from Mr. Urich indicates the above synonymy. In studying the larvae alone, we had no idea that the larvae with the swelling in the tube could be conspecific with those lacking it (compare our figures 52 and 53), but such seems to be the case. We had before us but one specimen of *vector* and two of *daumasturus*. Mr. Urich has recently sent us four isolations which show a straight tube in two, a barely perceptible indication of a swelling in one and a small swelling in another, placed more basally than in our figure 52. The adults are all alike, and agree with Theobald's description of *imitator* and with specimens from Brazil, which have been kindly sent by Dr. Lutz. Mr. Urich got the larvae in Bromelia water at Arima and Williamsville, Trinidad.

We are pleased to be able to restore Mr. Coquillett's determinations in at least one case (see our remarks, Journ. N. Y. Ent. Soc., xiv, 220 and 221).

***Culex lactator* Dyar & Knab.**

Culex lactator Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 209, 1906 (March).

Culex hassardii Grabham, Can. Ent., xxxviii, 167, 1906 (May).

We have examined larvae and adults sent by Dr. Grabham from Jamaica and find them conspecific with ours from Mexico and Costa Rica.

***Culex bastagarius* sp. nov.**

Very close to *C. mutator*, Dyar & Knab, described from Cordoba, Mexico. The larvae differ slightly. In *mutator* the whole body is densely hairy, the upper head tuft is of three rather long hairs and two of the apical antennal spines are well removed from the tip (Journ. N. Y. Ent. Soc., xiv, pl. x, fig. 42, 1906); in *bastagarius* the thorax only is hairy, the abdomen glabrous, the upper head tuft is of four hairs and very small, the four antennal spines are close together at apex.

The adults of *mutator* were named "*Melanoconion humilis* Theobald" by Mr. Coquillett. *Culex humilis* Theobald (Mon. Culic., ii, 336, 1901), was described from Sao Paulo, Brazil. We have seen neither adults nor larvae from Brazil, and, though Theobald's description, as far as it goes, applies to our specimens, the occurrence of closely allied forms in Mexico and Trinidad, prevent us from accepting the name for the form before us.

C. mutator and *C. bastagarius* are practically identical in markings (and agree with Theobald's description of *humilis*), but in *mutator* the upper

branch of the fifth vein (σ) has the scales narrowly linear and outstanding, while in *bastagarius* they are narrowly obovate, grading into those of the veins above.

One male, bred from larvae in small grassy pools at Laventille, Trinidad, by Mr. F. W. Urich. Two other males are in the collection, bred by Mr. A. Busck from unisolated larvae at Arima, Trinidad.

Type.—Cat. No. 10,018, U. S. Nat. Mus.

***Culex carmodyae mollis* subsp. nov.**

Mr. Urich has sent us a series of isolations bred from larvae in a hollow tree at Sangre Grande, Trinidad. The larvae are so near to those of *Culex carmodyae* Dyar & Knab, described from Santo Domingo (Journ. N. Y. Ent. Soc., xiv, 210, 1906), that we are unable to distinguish them. The adults, however, differ in having very narrow white bands at the bases of the tarsal joints with a few white scales at the apices of the joints also. In both the Santo Domingan *carmodyae* and the Trinidad representative, *mollis*, the hind tibiae have a line of bluish white scales above, the legs being black, the ends of the hind tibiae light brown. In *carmodyae* there is no trace of white tarsal bands, the legs being black, with a scarcely lighter brownish tint at the joints; in *mollis* the bands are very distinct although extremely narrow, hardly wider than the length of a scale.

Six specimens, four males, two females.

Type.—Cat. No. 10,022, U. S. Nat. Mus.

GENUS MOCHLOSTYRAX DYAR & KNAB.

***Mochlostyrax floridanus* sp. nov.**

The larva falls in the table (Journ. N. Y. Ent. Soc., xiv, 223, 1906), with *pilosus* D. & K., but the body is glabrous. Head broad and squarely transverse, eyes bulging, a large notch at insertion of antennae; clypeus shallowly emarginate with two spines; antennae long, a small notch at outer third bearing the long hair tuft; the two longest of the apical spines placed before apex. Both head hairs single, small, a small third hair below, ante-antennal tuft large, multiple. Lateral abdominal hairs in twos on the third to sixth segments. Comb of the eighth segment of 12 scales in a strongly curved, single, rather irregular row. Air tube three and a half times as long as wide, roundly tapered on the posterior side, with a pair of hooks at tip; eight long tufts on the posterior margin in a straight row, two of them within the pecten; two small lateral tufts. Tuft behind the comb large. Anal segment longer than wide, ringed; ventral brush moderate, dorsal tuft few haired. Anal gills rather long, the upper pair considerably shorter than the lower ones.

Larvae from Estero, Florida (J. B. VanDuzee); no adults.

Type.—Cat. No. 10,025, U. S. Nat. Mus.

This may be a synonym of *M. jamaicensis* Grabham (Can. Ent., xxxviii, 318, 1906). Dr. Grabham has kindly sent us larvae and they agree very closely with our *floridanus*. We consider them conspecific. However, Dr. Grabham gives several differential points in his description, and, as whole larvae are sent us, not isolations, there is a chance that a mixture of species occurred.

Mochlostyrax jamaicensis Grabham.

According to the characters given by Dr. Grabham, this species will fall in the table with *pilosus* Dyar & Knab, differing in the relative length of the tube. In *jamaicensis* the tube is "about five times as long as broad (at base)" while in *pilosus* it is four times as long as broad. There are fewer comb scales in *jamaicensis* and they are larger; the anal gills are unequal. Dr. Grabham has kindly sent us some larvae labelled "*Mochlostyrax jamaicensis*" which differ from his diagnosis in having the body glabrous and the air tube three and a half times as long as wide; otherwise they agree well with his description. They are apparently identical with our *M. floridanus*. Still this may be a case of geographically isolated forms, and the adults may be found to possess differences, when known, as in the case of *Culex carmodyae* and *C. mollis*, referred to above, where the larvae are alike and the adults differ, but inhabit separated localities. As it stands, *M. floridanus* will have to be added to the Jamaican list, it being more probable that Dr. Grabham had two species before him than that he should have made any such conspicuous errors in description as these would have to be considered.